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Offensive Mine Countermeasures: Enabler for Access and Power Projection

by

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A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Military Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

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ABSTRACT

Consideration of naval mine countermeasures (MCM) often only includes the defensive, reactionary operations which are inherent to the dedicated MCM force. However, given the premium placed on the United States' ability to project power and conduct forcible entry, a more offensive approach must be planned. Joint force commanders rely on the expeditionary nature of naval forces to transport troops and equipment to the fight, support forces ashore, and to establish and maintain local sea control. The US Navy's ability to conduct this range of operations can serve as a deterrent in itself. The asymmetry of mine warfare allows a relatively weaker enemy to potentially cripple this deterrent effect. Given the adverse effects that defensive MCM can have on the JFCs operational factors of time, space and force, the merits of offensive measures are evident. By eliminating or reducing the mine threat at the source, the commander frees up friendly forces, reduces time delays, and assures freedom of maneuver. Traditional dedicated MCM forces require extensive time to both transit to the area of operations and also to engage in actual counter-mining activities. Additionally, the JFC has to plan for protection of these unarmed forces. Therefore, to reduce the risk of losing the initiative and facing heavier casualties, *offensive* MCM should be the primary consideration of an operational commander and staff facing a mine threat.

INTRODUCTION

Why should a Joint Force Commander (JFC) care about naval mine countermeasures? The primary reason is that United States' military strategy requires access to areas of global importance and sustainment of forces ashore. Both the *National Defense Strategy* and *A Cooperative Strategy for 21st Century Sea Power* speak to the imperative of access and freedom of movement. Naval mine countermeasures (MCM) can be misconstrued by JFCs as simply a reactionary effort to be undertaken when a suspected mine is spotted in the water. Much of this is due to the fact that offensive MCM is not as well studied as its defensive counterpart. Never the less, commanders should consider MCM vital to their operational functions to better integrate it into operational planning. This paper will argue that *offensive* MCM, an often overlooked aspect of mine warfare, should be the primary consideration of an operational commander and staff facing a mine threat. Further, this paper will provide the context of MCM and examine why offensive MCM is especially important if the commander is to ensure access and freedom of action. Recommendations to the JFC concerning the application of these measures will also be offered.

Discussions of naval mine countermeasures often lead to such topics as acquisitions, mine warfare force structure, or the Navy's apparent failure to capitalize on lessons learned. Arguments have also been made for the need to "mainstream" mine warfare as a force-wide competency. However, the most relevant facets of mine warfare to the joint force commander are the impingement upon sea control, operational maneuver, and the resulting impact on the time factor required to accomplish objectives. The sea mine problem is often seen as purely naval in nature, but the effects from an operational perspective have important implications for both the threat to air and land forces. History has shown that sea mines can

disrupt military operations as well as global commerce. At the operational level, a commander will likely depend on maritime support in the form of transport, supply, strike, and air-defense, to name a few, which can be vulnerable to sea mines. A disruption to any of these attributes of the sea domain can adversely affect the balance of operational factors on which the JFC depends.¹ Too often, the mine problem is handled in a reactionary manner, which drastically stretches the time-line out. Therefore a more aggressive posture should be taken. Offensive mine countermeasures, or anti-mining, can enhance the operational commander's chances for success and mitigate the delaying effects that mines can create. The intent of this paper is not to be an exhaustive mine warfare primer, rather it is to bring offensive MCM to the forefront of the JFC's tool kit.

THE CONTEXT OF MINE COUNTERMEASURES

Mine Warfare (MIW) is a naval competency broken down into two basic divisions; mining and mine countermeasures. Mine countermeasures is the process of defeating a mine threat posed by an enemy and will be the focus of this paper. Within the context of MCM, two types of countermeasures must be identified. These are offensive and defensive in nature.² Defensive MCM encompasses those plans and tactics that counter a mine threat after mines are discovered in a body of water. There is much written about the execution of defensive MCM, and there is even a dedicated force in the US Navy to execute it. However there is much less consideration given to a more effective offensive means of anti-mining.³

¹ Patrick A. Molenda, "Don't Forget dedicated Mine Countermeasures," *Proceedings* 127, no. 10 (October 2001): 38-41.

² U.S. Navy, *Naval Mine Warfare*, Naval Warfare Publication (NWP) 3-15 (Washington DC: Department of the Navy, 2004), 3-1.

³ There have been several scholarly papers written about offensive MCM, especially T. Michael Cashman's "Striking First...Mine Warfare goes on the Offensive", and Bruce F. Russell's "The Operational Theater Mine Countermeasures Plan: More Than a Navy Problem", however, there is little else written specifically on the subject of offensive MCM.

The distinction is clear; destroy the enemy mine capability at its source rather than after it has been deployed. There are hundreds of pages of naval doctrine that address defensive MCM, but only several paragraphs offered for offensive. This helps to explain why JFCs may not consider it in their operational planning and therefore miss an opportunity to neutralize a threat before it matures.

Consideration of mine countermeasures often devolves to the Navy's dedicated MCM force. The triad, as it is referred to in the MIW community, consists of Airborne MCM, Surface MCM, and Undersea MCM (explosive ordnance disposal divers). Offensive MCM generally lies outside the purview of the Navy's MCM community. This is due to the fact that U.S. dedicated MCM was conceived for a primarily defensive purpose. During the Cold War the U.S. Navy focused on blue water engagements. Thus the likelihood of amphibious assaults was diminished. The result was an MCM force aimed at the mine threat in the ports on either side of trans-oceanic lines of communication. It was assumed that allied MCM would ensure protection from mines in foreign ports and the U.S. Navy would do the same in its domestic ports and approaches.⁴ The result was that U.S. mine countermeasures took on a distinctly defensive nature and offensive means to counter sea mines were not given due concern nor developed.

OFFENSIVE MCM: THE FIRST CONSIDERATION

The requirement for power projection and the necessity of access to do so are recurring themes in joint doctrine. Also, forcible entry remains a core competency of the

⁴ Owen R. Cote Jr., "Assuring Access and Projecting Power. The Navy in the New Security Environment", (research paper, Cambridge, MA: Massachusetts Institute of Technology. April 2002). No page numbers given.

United States' armed forces and this capability can serve as a deterrent itself.⁵ The joint publication for deployment and redeployment states: "The capability to project forces to the operational area and rapidly integrate them into the joint force as directed by the joint force commander is essential."⁶ This publication further stresses that timely response to crises and other hostile actions is critical.

In the joint world, offensive MCM should be seen as a key enabler for these aspects of operations. Additionally, phase II operations allow the commander to seize the initiative. Instrumental to this are freedom of action and access. Both of these could be crippled by the presence of sea mines or the painstakingly slow process of mine sweeping in a defensive manner. The most common course of action related to sea mines is to wait until they become a problem and then deploy dedicated MCM. The limited size of this MCM force and its defensive roots mean that a JFC might have to wait days, if not weeks, for the assets to arrive on station. In the mean time, he risks losing the initiative and not being able to land or supply forces on shore. Time is of the essence in forcible entry operations and delays can create a loss of credibility or even more important, loss of life and equipment.

Some have proposed that there is a need to infuse more funding into the MCM community to acquire more high-tech countermeasures tools. Others have proposed that mine countermeasure capabilities need to be resident within Carrier Strike Groups (CSGs), Expeditionary Strike Groups (ESGs), and other surface action groups. This is the so called "organic MCM" capability that has been developed since the 1991 Gulf War. All of these proposals have a drawback, however. They fail to address the threat *before* it becomes a problem. The JFC should be aware that current MCM capabilities are likely better suited for

⁵ Frank G. Hoffman, "Forcible Entry is a Strategic Necessity," *Proceedings* 130, no. 11, (November 2004): 2.

⁶ Chairman, U.S. Joint Chiefs of Staff, *Deployment and Redeployment Operations* Joint Publication (JP) 3-35, (Washington DC: CJCS, May 2007), ix.

post-hostilities clean-up operations. For instance, when the dedicated MCM triad is doing its job, it not only requires transportation to the JOA, it also requires protection which the JFC will have to provide. Air superiority has to be established or the unarmed MCM ships and helicopters will be attrited easily. For these reasons, the planner's first consideration given a mine threat should be toward investigating how to proactively reduce the threat. Planners and intelligence officers must analyze the situation as a whole and take into account the factors that present risks such as legality and escalation and balance those with the costs of not going after the mines at the source. They must look at both kinetic and non-kinetic means to achieve the commander's vision and ultimately decide if they want to employ forces in the presence of a mine threat. It is understood that offensive MCM may not completely destroy the threat, as sea mines can be very low technology weapons which are easily hidden or transported. The point is that offensive methods have the potential to reduce the enemy's mining capability and allow the JFC to retain the all important initiative.

THE MINE THREAT AND POWER PROJECTION

In the realm of access and sea control, one can surmise anything that would prevent a JFC from moving and maneuvering his forces to meet his objectives should be a grave concern, especially when there are troops ashore who depend on support and supply from the sea. Even the mere *threat* of sea mines can be enough to delay operations, hampering the commander's balance of time, space and force. For a geographic combatant commander (GCC), sea mines can have a major impact on regional and global economies, given that ninety percent of commerce and two-thirds of the world's petroleum depends on oceanic

shipping.⁷ Therefore, even though offensive mine countermeasures has a Navy “flavor” to it, it is imperative that commanders consider the joint implications of an unchecked mine threat. Given the trend to reduce the footprint of US forces in foreign countries, military commanders will increasingly rely on expeditionary capabilities.

This means there is a high premium placed on access and sea control. In fact, the nation’s maritime leaders have codified these requirements in their capstone document, *A Cooperative Strategy for 21st Century Seapower*. In it, they discuss six key capabilities, or strategic imperatives, and among them is the ability to operate freely at sea and to guarantee access. The strategy states: “Our ability to overcome challenges to access and to project and sustain power ashore is the basis of our combat credibility.”⁸ Among the many factors that enable this ability is adaptive joint planning. It is here that operational planners must consider offensive mine countermeasures early in the process, and not simply wait to react to sea mines once employed. Reliance on dedicated, defensive mine-countermeasures should only be a secondary consideration after offensive measures have either been utilized or deemed unwarranted.

Operational maneuver from the sea (OMFTS) relies on freedom of maneuver, access, and sea control. This concept is the mainstay of the Navy and Marine Corps and could be vulnerable to well placed sea mines. The multi-dimensional and combined arms characteristics of naval expeditionary forces give them a unique range of capabilities that allows them to be among the first forces ordered into a hostile situation by a JFC. Although both wars against Iraq allowed for a relatively unchallenged build-up of forces in the Arabian

⁷ James T. Conway, Gary Roughead, Thad W. Allen, *A Cooperative Strategy for 21st Century Sea Power*, (Washington DC: Department of the Navy, October 2007). No page numbers given.

⁸ Ibid.

Gulf, this will not be the case all the time.⁹ OMFTS is an enabler for the JFC to accomplish his objectives, and MCM is an enabler for OMFTS. The cost of not preventing mines from going into the water in the first place will be readily apparent to the JFC when his initial strike ashore is delayed, or when heavy equipment and supplies are not readily available. In large scale operations where army and air force assets would be utilized for a protracted amount of time, it would become necessary to utilize naval expeditionary forces to “prepare the theater for heavier forces,”¹⁰ a task that demands freedom of maneuver.

Forcible entry into an operating area might be required for such an endeavor mentioned above, and this can be complicated by the presence of mines. The importance of forcible entry capabilities and power projection cannot be understated, nor can the link between these concepts and mine countermeasures. The United States’ ability to project its power can be a deterrent in itself. The deterrent can lose its effect, however, if belligerents use sea mines to cripple a joint force before it can reach its objectives. A naval expeditionary force allows a JFC to maneuver his forces in close proximity to enemy shores so he can strike at a time and place of his choosing. This advantage absolutely depends on freedom of movement and local sea control.

Sea control is not attained merely for the benefit of the naval component commander; in fact, the objectives of the ground forces can determine the location and extent of sea control.¹¹ Sea control allows for the projection of power and is the enabler for strikes, amphibious assault, and protection of maritime trade. Given the importance of local command of the sea and that many other nations cannot challenge the U.S. Navy in a

⁹ John Patch, “Don’t Ignore Sea Control”, *Proceedings* 129, no. 10, (October 2003): 40.

¹⁰ Charles C. Krulak, “Operational Maneuver from the Sea”, *Joint Force Quarterly*, no. 21, (Spring 1999): 78.

¹¹ Milan Vego, “Obtaining, Maintaining and Exercising Sea Control”, *On Naval Warfare*, (Newport, RI: Naval War College, September 2008): 38.

conventional manner; mines are very attractive to a weaker adversary. The asymmetry is extreme and effective.

To further comprehend offensive MCM it is helpful to examine an analogous form of warfare from which comparisons can be made. Anti-submarine warfare (ASW) is similar in many ways to mine warfare. In both cases the threat is often unseen and lays in wait for targets to present themselves. Once a submarine leaves port and submerges, the task of neutralizing it, much less finding it, becomes extremely difficult. Therefore, once a submarine has sortied, its opponent will have to defend against it. Military scholar Jan S. Breemer, in discussing ASW strategy wrote that neutralizing the submarine threat at its source is the most desirable and ideal method to reduce the danger.¹² More specifically, items to be targeted should include sub bases, shipyards, etc. and other infrastructure vital to submarine operations. Although these facilities are very likely to be defended, they are easier to find than a submerged submarine, or the more difficult problem: a submerged mine. Therefore a connection can be made between the merits of offensive ASW and MCM in order to understand the appeal of offensive countermeasures.

Another military problem useful to illustrate offensive countermeasures is the improvised explosive device, or IED. Operationally speaking, IEDs and sea mines are nearly identical except for the medium in which they operate. The psychological threat is pervasive because the soldier on the ground or the ship's captain knows that there is an explosive out there somewhere either just below the waterline or under a pile of rocks waiting to inflict its damage. Much like the defensive MCM community, the people tasked to solve the IED problem developed technological solutions to either neutralize IEDs or locate the devices for

¹² Jan S. Breemer, "Anti-Submarine Warfare: A Strategy Primer", (research paper, Monterey, CA: Naval Post Graduate School, July 1988), 3.

avoidance. A former head of the task force established to defeat IEDs in Iraq displayed his frustration and recognition that defensive measures were not enough by themselves.¹³ He realized the enemy could adapt their technology faster than new countermeasures could be fielded and that there needed to be more focus on the IED builder, or the source. In other words, he had concluded that an *offensive* counter IED approach needed to be invested in.¹⁴ Therefore, planners and commanders alike must think beyond the menu of technological defensive solutions that are presented when these types of asymmetric threats are at hand.

The JFC may have limited knowledge of sea mine countermeasures, especially if he is not a naval officer. Commanders and their staffs who seek advice on mitigating the risk posed by mines will likely get a list of current dedicated MCM capabilities; the triad consisting of air, surface and undersea forces. Seemingly, offensive measures are usually only given brief mention in doctrine and in scholarly papers, which favor more reactionary solutions. Some argue that the only way to achieve sea control, and therefore project power from the sea is through the integration of organic defensive MCM into our deployed naval forces.¹⁵ Proponents of this organic MCM capability offer that in future conflicts the U.S. might not have the time to wait for the dedicated MCM triad to make its way from CONUS bases to the joint operating area (JOA). Although these proponents are justified in their concern with the time factor, they overlook a simple fact: An offensive measure to counter the sea mine threat could possibly reduce the time delay to zero. Not to assert that offensive measures can eliminate the threat entirely, but total reliance on the existing MCM force means that the commander is essentially waiting to be put on the defensive by the enemy

¹³ Rick Atkinson, "You can't Armor Your Way out of this Problem", *The Washington Post*, (02 October 2007): Sec. A.

¹⁴ Ibid.

¹⁵ Chuck Horne, "What it takes to go 'Anytime, Anywhere'", *Proceedings* 124, no. 1, (January 1998): 82.

mine layer. By nature, conventional MCM operations would add to the complexity and complicate C2 structures. Additionally, forcible entry operations often take place in the “seize the initiative” phase of joint operations, which are not conducive to delay.¹⁶ Further, the forces ashore who establish a lodgment after the forcible entry will require sustainment, which necessitates the security of sea lines of communication (SLOCs). The difficulty of securing SLOCs will be reduced if mines were kept from entering the water at all. Finally, although defensive MCM will serve the commander well *if* he is forced into a reactionary situation, the first inclination should be aimed at neutralization at the source, or prevention of weapon employment.

THE OFFENSIVE SCHEME

So what does an operational commander need to know about planning and executing offensive mine countermeasures? First it is informative to examine offensive MCM in terms of intelligence, ends, ways, means and risks. The first requirement is a thorough intelligence estimate of the enemy’s sea mine capability. The JFC should direct an examination of not only the enemy order of battle, but also its sea mine infrastructure. This should include mine storage sites and the manufacture and supply nodes of the enemy’s sea mine capability. If the source of a specific component can be discovered, it may reveal a vulnerability in the mining process. In addition to intelligence exploitation of the mine itself, vulnerabilities in the mine transportation system should be identified. This includes the land and sea transport nodes that enable the mines to be deployed. Therefore intelligence has two broad

¹⁶ Ibid, xii.

contributions to offensive MCM; exploitation of the weapon itself, and discovery of vulnerabilities in the infrastructure.¹⁷

After the intelligence estimate, the JFC's planning staff should consider ends, ways, means and risks in order to determine if offensive mine countermeasures can or should be conducted. As for ends, or objectives, the planner must have already determined the commander wants to prevent mines from going into the water at all. If this is the commander's intent, then the planners must decide whether to eliminate the mines directly on shore, or indirectly by attacking the infrastructure. This is where consideration of ways comes into play.

There are many methods to conduct offensive MCM that operational planners should consider in order to present the commander a range of options. As mentioned previously, mine manufacture or storage facilities might present themselves as targets, as well as the transport system.¹⁸ This includes rail stations, truck loading docks, or mine-laying vessels. In other words, all of the vulnerabilities which were identified by the intelligence estimate must be analyzed by planners to determine which method is warranted. This is where the broader operational view must be considered. The JFC might choose to preserve as much of the existing infrastructure as possible and not create more complexities in the post-hostilities phase. For this reason the planners must have a thorough understanding of which nodes in the enemy's sea mining capability can be neutralized without detrimental impact on the commander's overall vision. At this point, the planners should also consider kinetic versus non-kinetic ways to offensively thwart the enemy mine capability. Kinetic methods which

¹⁷ Chairman, U.S. Joint Chiefs of Staff, *Barriers, Obstacles and Mine Warfare for Joint Operations*, Joint Publication (JP) 3-15, (Washington DC: April 2007), IV-6.

¹⁸ Bruce Russell, "The Operational Theater Mine Countermeasures Plan: More than a Navy Problem", (research paper, Leavenworth, KA: School of Advanced Military Studies, US Army Command and General Staff College, 14 May 1995), 29.

could be used on the vulnerabilities mentioned above include strikes on the factories and storage dumps. However, the JFC may prefer non-kinetic or less destructive options. This could range from special operations forces (SOF) covertly disabling mine laying vessels, to information operations (IO) aimed at either the prevention or reduction of the enemy utilization of sea mines. One could also blockade the mine-layers in port. Messages could be broadcast through leaflets, electronic means, etc., stating the severe repercussions if enemy mine layers are discovered leaving port. Another instance where non-kinetic methods could be used is where a third party supplies either the mines themselves, or other critical components of the enemy's MIW capability. In this case, the third party might be influenced to cease its assistance to the enemy. This is venturing into the realm of non-military instruments of national power, but the JFC must consider this option as it may be the best way to protect his forces from sea mines.

The previous point makes the transition to the means, or resources needed to conduct offensive MCM. The method selected by the commander will determine which resources are used, however in some circumstances the resources available at the time will constrain what options are available. In any case, the *means* by which to conduct offensive MCM has perhaps the most joint implications. This is because the choice between kinetic or non-kinetic and other non-military operations may be conducted by any of the military services, or even civilian agencies. Consider a strike on a mine storage facility. This could be conducted by air force or naval aircraft, or even army assets. In the less destructive realm of operations, SOF could be used to disable mine laying vessels as mentioned earlier, or covert action could be taken to sabotage the mine production infrastructure. The bottom line is that the JFC and his planning staff are in a position to have these assets at their disposal and thus

should be informed of capabilities which can facilitate access and sea control. Given the disadvantage of the length of time that reactionary mine countermeasures requires, it is beneficial to the entire joint force that offensive measures be planned.

There are inherent risks involved with the offensive approach to mine countermeasures. There are legal complexities that deal with the preemptive nature of strikes that would take place prior to the start of hostilities. Mines are indeed lawful when used within the constructs of international law, but so is the right of self-defense. There is some grey area in the law when the commander wishes to act offensively.¹⁹ In this realm the joint force planners must consult their JAGs and clarify rules of engagement (ROE). Other risks to be considered include the alienation of allies, unwanted escalation, and the possibility that offensive measures might be counter-productive. For example, the enemy, fearing a strike on its MIW capability, might sortie all available vessels and deploy their entire stockpile as an act of desperation. Alienation of allies or other nations becomes a concern when a preemptive strike is to be executed, or where a non-kinetic measure requires that they cease supplying the enemy with materials for mine warfare as discussed earlier. As for the possibility of escalation, this should be a concern when the JFC is considering offensive MCM; not only a kinetic strike, but any action that will limit the enemy's ability to leverage the asymmetric advantage that sea mines can provide.

A final risk that the JFC must manage is the safety of his forces. The objective of eliminating or reducing the mine threat in the first place was to protect friendly forces and ensure access. The commander and his staff must realize that if the mine problem is not reduced before entering the water, the joint force will be on the defensive with respect to

¹⁹ T. Michael Cashman, "Striking First...Mine Warfare Goes on the Offensive", (research paper, Newport, RI: U.S. Naval War College, Joint Military Operations Department, May 2002), 1.

mines and will have to accept delays to follow-on operations. This is perhaps the most important risk decision the JFC will have to make.

CONSIDERATIONS FOR THE JOINT FORCE

The following is a summary of recommendations drawn from the preceding analysis regarding the methods and resources a JFC can employ to conduct offensive mine countermeasures. They are presented from non-kinetic to overt action:

1. Consider establishing a “mine countermeasures tracking cell”. This concept is briefly mentioned in JP 3-15 *Barriers, Obstacles and Mine Warfare for Joint Operations* but no further guidance is given doctrinally.²⁰ This cell should be embedded in the J-2 directorate and would analyze the enemy’s MIW capability and request ISR assets to track the enemy’s mine related infrastructure to identify indicators that mine laying is imminent. This would provide the commander with information and more importantly the time to develop an offensive course of action to pursue.

2. Consider non-kinetic measures. Given the legal complexities that can arise from conducting what some may view as a preemptive strike, the commander may elect to use less damaging techniques such as IO, or influence over third party mine suppliers. This also preserves infrastructure to ease the burden of post-hostility rebuilding. This is where interagency or diplomatic tools could be used. Inter-governmental agreements or treaties could prove successful in some situations to prevent mines from ever entering the water.

3. Maritime presence as deterrence. The belligerent nation is likely well aware of the effectiveness of US ISR capabilities and precision strike competency. The presence of naval ships can cause the enemy to think twice about sending his vessels out to lay mines knowing

²⁰ Joint Chiefs of Staff, “JP 3-15”, IV-8.

that the navy has them under surveillance. Also, recent exploits of naval special warfare combating piracy may additionally discourage enemy boats from sewing their mine fields.

4. Mine the enemy. The JFC should consider using mines to his benefit in order to shape the battle space. In this endeavor he has a range of options depending on the phase of operations. He may wish to blockade the enemy mine layers in port with mines of his own, or he can simply lay mines in a fashion that protect friendly operating areas.²¹ By doing this the commander denies the enemy opportunity to impede access and freedom of action.

5. Kinetic strikes. As mentioned previously, this option allows for the reduction of the mine threat at the source. This can be accomplished with strike aircraft, missiles, or ground assault. This option requires that sea mine infrastructure nodes are identified and passed along to the joint targeting organization for inclusion on the target list. In choosing this course of action the planners must consider the collateral damage and weigh the benefits of possible reduction in the mine threat to the cost of escalation or popular opinion.

FINAL REMARKS

“Whatever the nature of the war in which we are engaged, whether it be limited or unlimited, permanent and general command of the sea is the condition of ultimate success.”²²

The purpose of this paper was to demonstrate to the operational commander the need to consider offensive vice defensive mine countermeasures when faced with a mine threat. Defensive MCM adds a layer of complexity and skews the commander’s factors of time, space and force. Offensive measures to defeat the sea mine threat do have inherent risks such as escalation, strategic communications, and alienation of allies, but the cost of

²¹ Russell, “The Operational Theater Mine Countermeasures Plan”, 29.

²² Julian S. Corbett, *Some Principles of Maritime Strategy*, (London: Longmans Green and Company, 1918), 150.

becoming victim to mines can outweigh these risks. These are the factors that the operational planners must wrestle with. Finally, application of offensive MCM allows the JFC to seize the initiative and avoid a defensive posture which could be devastating to assured access or forcible entry operations.

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